

ACCESSION #: 9603290096

LICENSEE EVENT REPORT (LER)

FACILITY NAME: COMANCHE PEAK STEAM ELECTRIC STATION UNIT 2  
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DOCKET NUMBER: 05000446

TITLE: MANUAL REACTOR TRIP DUE TO TURBINE LOAD SWINGS

EVENT DATE: 02/23/96 LER #: 96-003-00 REPORT DATE: 03/25/96

OTHER FACILITIES INVOLVED: CPSES UNIT 1 DOCKET NO: 05000445

OPERATING MODE: 1 POWER LEVEL: 63

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR  
SECTION:

50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: David C. Kross - Operations Support

Manager TELEPHONE: (817) 897-8603

COMPONENT FAILURE DESCRIPTION:

CAUSE: SYSTEM: COMPONENT: MANUFACTURER:

REPORTABLE NPRDS: N

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

At approximately 7:27 a.m., on February 23, 1996, Comanche Peak Steam Electric Station (CPSES) Unit 2 was in Mode 1, Power Operation, with reactor power at approximately 63 percent (approximately 742 Megawatts). Reactor power was being decreased by the Reactor Operator (Utility, Licensed) at the rate of 5 percent per hour in preparation for CPSES Unit 2 second refueling outage (2RF02). When the load reduction was performed, turbine output dropped from 742 MWe to 160 MWe, and was oscillating 20 to 30 megawatts on both sides of 160 MWE. The cause of the load decrease was not apparent. In response to the loss of control, the Unit 2 Supervisor made a conservative

decision to manually trip the reactor.

The cause event was postulated to be faulty printed circuit cards in the Electro-Hydraulic Control (EHC) runback circuitry. The faulty cards have been replaced.

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## I. DESCRIPTION OF THE REPORTABLE EVENT

### A. REPORTABLE EVENT CLASSIFICATION

Any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)(EHS:(JC)

### B. PLANT OPERATING CONDITIONS PRIOR TO THE EVENT

On February 23, 1996, Comanche Peak Steam Electric Station (CPSES) Unit 2 was in Mode 1, Power Operation, with reactor power at approximately 63 percent (approximately 742 Megawatts). Reactor power was being decreased at the rate of 5 percent per hour in preparation for CPSES Unit 2 second refueling outage (2RF02).

### C. STATUS OF STRUCTURES, SYSTEMS, OR COMPONENTS THAT WERE INOPERABLE AT THE START OF THE EVENT AND THAT CONTRIBUTED TO THE EVENT

There were no inoperable structures, systems, or components that contributed to the event.

### D. NARRATIVE SUMMARY OF THE EVENT, INCLUDING DATES AND APPROXIMATE

TIMES

At approximately 7:27 a.m., on February 23, 1996, Comanche Peak Steam Electric Station (CPSES) Unit 2 was in Mode 1, Power Operation, with reactor power at approximately 63 percent (approximately 742 Megawatts). Reactor power was being decreased by the Reactor Operator (Utility, Licensed) at the rate of 5 percent per hour in preparation for CPSES Unit 2 second refueling outage (2RF02). Immediately following a load reduction by the Unit 2 Reactor operator, turbine output dropped from 742 MWe to 160 MWe, and was oscillating 20 to 30 megawatts on both sides of 160 MWE. All twelve steam dumps opened and steam flow/ feed flow mismatch alarms annunciated. The cause of the load decrease was not apparent. In response to the loss of control, the Unit 2 Supervisor made a conservative decision to manually trip the reactor. Both Motor Driven Auxiliary Feedwater Pumps were manually started. The Steam Generators 1, 2 and 3 reached the Lo Lo level setpoints which resulted in an automatic start of the Turbine Driven Auxiliary Feedwater pump.

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An event or condition that results in an automatic actuation of an ESF including the RPS, is reportable pursuant to 10CFR50.72(b)(2)(ii). On February 23, 1996 at approximately 10:06 a.m., the Nuclear Regulatory Commission Operations Center

was notified of the event via the Emergency Notification System.

#### E. THE METHOD OF DISCOVERY OF EACH COMPONENT FAILURE, OR PROCEDURAL OR PERSONNEL ERROR

The Steam Generator steam flow/feed flow mismatch alarms alerted the Balance of Plant operator.

### II. COMPONENT OR SYSTEM FAILURES

#### A. FAILURE MODE, MECHANISM, AND EFFECT OF EACH FAILED COMPONENT

The cause of the Turbine Generator load swings could not be initially determined. During troubleshooting efforts, TU Electric Engineering has postulated that faulty printed circuit cards in the Electro-Hydraulic Control (EHC) runback circuits may have caused the loadshed.

#### B. CAUSE OF EACH COMPONENT OR SYSTEM FAILURE

The cause of the potentially faulty printed circuit card failures is unknown.

#### C. SYSTEMS OR SECONDARY FUNCTIONS THAT WERE AFFECTED BY FAILURE OF

#### COMPONENTS WITH MULTIPLE FUNCTIONS

Not applicable - there were no failed components with multiple functions that affected this event.

#### D. FAILED COMPONENT INFORMATION

Manufacturer : Siemens

Part Name : a) Amplifier card

b) Integrater card

Part Number : a) A5-000-002-004

b) A5-000-006-012

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### III. ANALYSIS OF THE EVENT

#### A. SAFETY SYSTEM RESPONSES THAT OCCURRED

The following safety system actuations occurred as expected as a result of this event.

Reactor Protection System

Auxiliary Feedwater System (AFW) (EHS:BA).

#### B. DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY

Not applicable - there were no systems or components that were inoperable that contributed to this event.

#### C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT

This event is well within the limits of the analyses described in Section 15.2.2 of the CPSES Final Safety Analysis Report (FSAR) for "Loss of External Electrical Loads." Nuclear Steam Supply System can safely withstand a full load rejection. The event of February 23, 1996, occurred at 63 percent power, and all systems and components functioned as designed. Based on this analysis it was concluded that this event did not adversely affect the safe operation of CPSES Unit 2 or the

health and safety of the public.

#### IV. CAUSE OF THE EVENT

During troubleshooting efforts, TU Electric Engineering has postulated that faulty printed circuit cards in the Electro-Hydraulic Control (EHC) runback may have caused the loadshed.

#### V. CORRECTIVE ACTIONS

The immediate corrective actions were to manually trip the plant and stabilize it in Mode 3. The potentially faulty cards have been replaced. The EHC system will be connected to the minidas (a data acquisition equipment) to monitor equipment performance, for some period of time. If a similar load reduction does occur, the captured data will be utilized to evaluate the causes.

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#### VI. PREVIOUS SIMILAR EVENTS

There have been other events at CPSES which dealt with Turbine/Generator load swings causing a reactor trip. However, the causes of these events were deemed to be sufficiently different than the February 23, 1996 events.

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Log # TXX-96094

File # 10200

Ref. # 10CFR50.73(a)(2)(iv)

TUELECTRIC

C. Lance Terry

Group Vice President

March 25, 1996

U. S. Nuclear Regulatory Commission

Attn: Document Control Desk

Washington, DC 20555

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)-UNIT 2

DOCKET NOS. 50-446

MANUAL OR AUTOMATIC ACTUATION OF ENGINEERED SAFETY

FEATURES LICENSEE EVENT REPORT 446/96-003-00

Gentlemen:

Enclosed is Licensee Event Report (LER) 96-003-00 for Comanche Peak Steam

Electric Station Unit 2, " Manual Reactor Trip due to Turbine Load

Swings."

Sincerely,

C. L. Terry

By:

M.R. Blevins

Plant Manager

OB:ob

Enclosure

cc: Mr. L. J. Callan, Region IV

Mr. W. D. Johnson, Region IV

Resident Inspectors, CPSES

P.O. Box 1002 Glen Rose, Texas 76043

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